

Claims:

1. A method for manipulating samples, in particular tissue samples, wherein by means of needles, holes are punched in sample carriers and samples punched-out from preparations, in particular prepared tissue specimens, said samples are then inserted into the punched-out holes in the sample carriers, wherein the surface position of the sample carriers or the preparations is detected prior to the punching process, characterized in that the surface position of the sample carriers or the preparations is detected by suction lines opening into the needles, whereby the negative pressure resulting from the approach of the needles towards the surface of the sample carrier or preparation is detected and that the needles, are inserted into the sample carrier or preparation in a predefined punching depth, based on the detected position.

2. The method of claim 1, characterized in that the values of the positions are saved in conjunction with an identifier for the sample carrier or the preparation.

3. The method of claim 1 or 2, characterized in that the punching depth is variable.

4. The method of one of the claims 1 to 3, characterized in that the material located within the needle is dislodged mechanically with an ejector arranged within the needle after the punching process, and that the needle is cleared with compressed air after the ejection procedure.

5. The method of one of the claims 1 to 4, characterized in that the needle is submerged in a cleaning fluid after at least one punching process and is afterwards cleared with compressed air.

6. The method of one of the claims 1 to 5, characterized in that the needle is tested for permeability, by negative pressure applied through the suction line 9.

7. The method of one of the claims 1 to 6, characterized in that the detection of the positions, the punching processes, the ejection procedures and if need be the cleaning and test for the permeability of the needle are controlled by a timer.

8. The method of one of the claims 1 to 7, characterized in that the holes for the samples in the sample carrier are arrayed in a pattern, which is generated by the arrangement of the holes in form of a binary code and thus allowing for an unambiguous assignment of the samples.

9. The method of one of the claims 1 to 8, characterized in that the manipulation of the samples is carried out temperature controlled.

10. A device for manipulating samples, in particular tissue samples, with at least one needle (2) for punching holes (34) in sample carriers (4) and at least one further needle (3) for punching-out samples from preparations (5), in particular from prepared tissue specimens, wherein a device is provided for the detection of the surface position of the sample carriers (4) or preparations (5), characterized in that the device for the detection of the surface position of the sample carriers (4) or preparations (5) is formed by suction lines (9) that open into the needles (2, 3) whereby the suction lines (9) are connected with a unit (11) for

detecting negative pressure so that the approach of the needles (2, 3) to the surface of the sample carriers (4) or the preparations (5) is detectable by the resulting negative pressure and that a drive unit (7) is provided for displacing the needles (2, 3) relative to the sample carrier (4) or preparation (5) from the detected position of the surface to a predefined punching depth (D).

11. The device of claim 10, characterized in that the unit (10) for generating a negative pressure, is constituted by a vacuum pump.

12. The device of claim 10 or 11, characterized in that a storage device (12) is provided for the detected position values of the sample carriers (4) or preparations (5) in combination with an identifier of said sample carriers (4) or preparations (5).

13. The device of one of the claims 10 to 12, characterized in that the needles (2, 3) possess a cross-hole (31) into which the suction line (9) opens.

14. The device of one of the claims 10 to 13 character-

ized in that the needles (2, 3) are arranged within a needle retainer (22), said needle retainer (22) possesses a drilled hole (28) which is connected with the cross-hole (31) of the needle.

15. The device of one of the claims 10 to 14 is provided, characterized in that a device for changing the punching depth (D).

16. The device of one of the claims 10 to 15, characterized in that a preferably pneumatically operated ejector for the ejection of the punched-out materials, is arranged within the needles (2, 3).

17. The device of one of the claims 10 to 16, characterized in that a waste container (15) is provided for retaining the punched-out materials of the sample carriers (4).

18. The device of one of the claims 10 to 17, characterized in that a cleaning reservoir (16) with cleaning fluid is provided, in which the needles (2, 3) can be submerged.

19. The device of one of the claims 10 to 18, characterized in that the waste container (15) and if need be the cleaning reservoir (16) are arranged between the sample carriers (4) and the preparations (5) or between a support (6) carrying the sample carriers (6) and a support (6) carrying the preparations respectively.

20. The device of claim 19, characterized in that the support (6) for the sample carriers (4) and the support (6) for the preparations (5) are constructed in a circular shape and arranged side by side.

21. The device of one of the claims 10 to 20, characterized in that at least one needle for hole-punching (2) and at least one needle for sample punching are mounted on a pivoting head (1) in which the axes (A, B) of the hole-punching needle (2) and of the sample punching needle (3) intersect each another at the pivot point (C) of the pivoting head.

22. The device of claim 21, characterized in that the pivoting head (1) can be operated by a preferably pneumatic pivoting drive (18).

23. The device of claim 21 or 22, characterized in that a drive unit (7) is provided for displacing the pivoting head (1) relative to the sample carriers (4) or preparations 5.

24. The device of one of the claims 10 to 23, characterized in that a control system (13) is provided, preferably a computer for controlling the position-detection, the punching processes, the ejection procedures and if need be the cleaning procedures.

25. The device of one of the claims 10 to 24, characterized in that an arrangement is provided for maintaining the temperature.